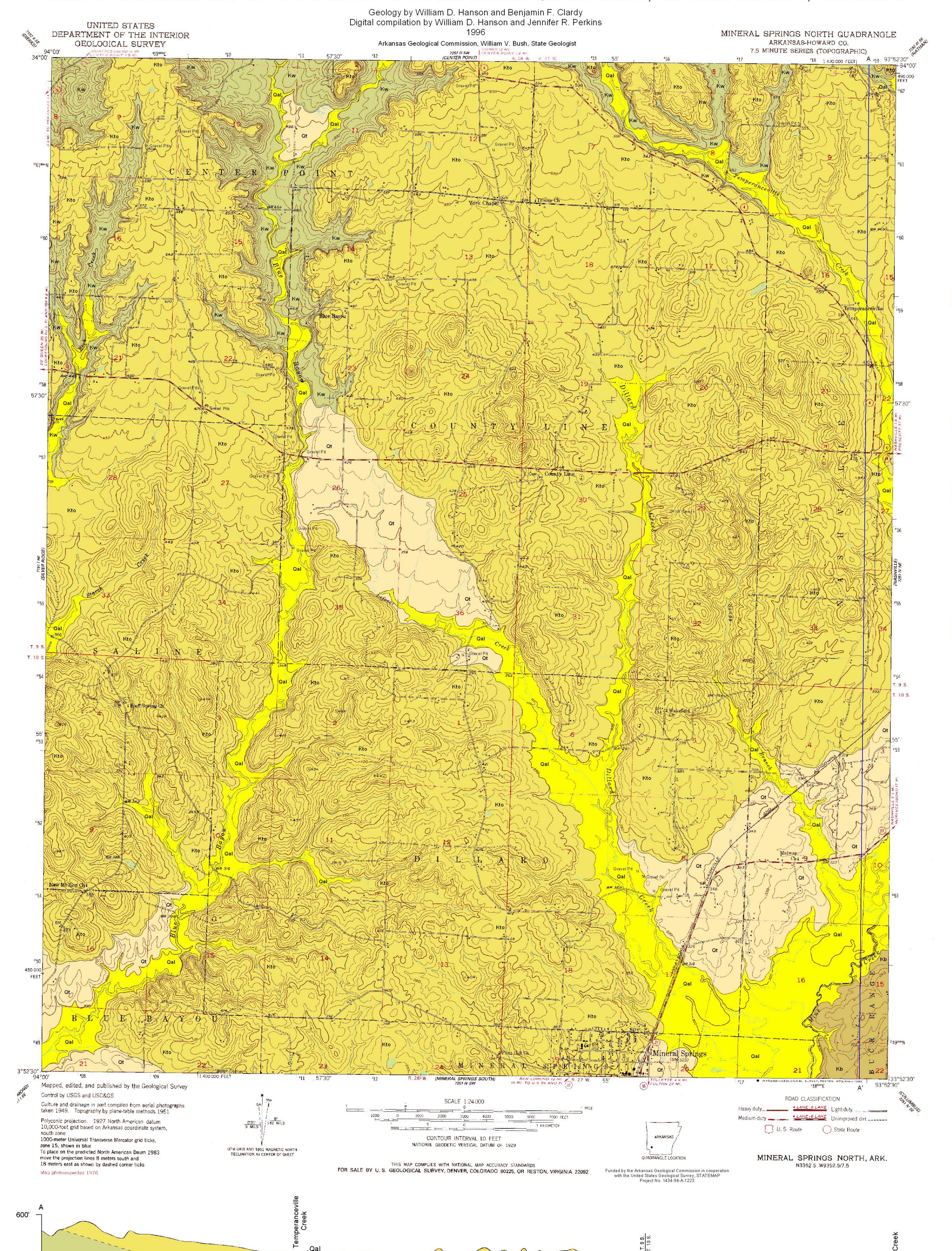
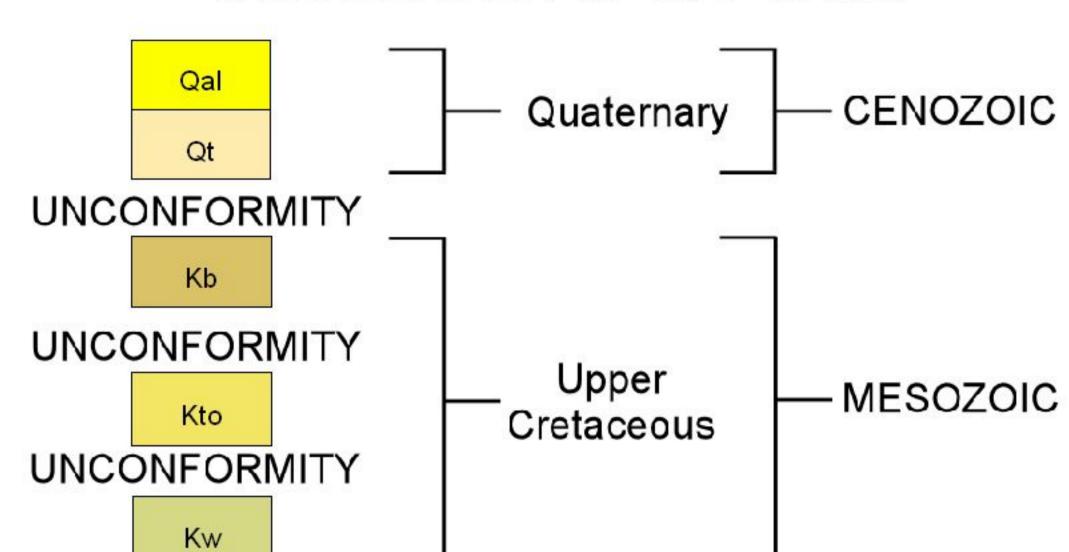
DIGITAL GEOLOGIC MAP OF THE MINERAL SPRINGS NORTH QUADRANGLE, HOWARD COUNTY, ARKANSAS



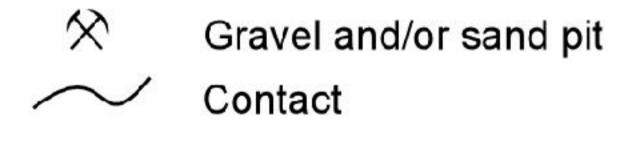
CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

- Alluvium (Quaternary) Variably sized gravel overlain by unconsolidated sand, silt, and clay comprises the unit. This unit occurs in the floodplains of streams and rivers. The sediments form a rich loam and are excellent for agriculture. Gravels, primarily novaculite, originated in the Ouachita Mountain region and from local Cretaceous formations. Thickness varies from 0 to 25 feet. Areas of alluvium are presently receiving sediment deposition.
- Terrace Deposits (Quaternary) Terrace deposits generally grade from basal gravel to silt and clay at the top. Gravels, primarily novaculite, originated in the Ouachita Mountain region and from local Cretaceous formations. Thicknesses are generally less than 50 feet. Terraces are topographic features which are former floodplains of nearby streams and/or rivers. The sediments form a rich loamy soil. The basal gravel is sometimes utilized for water- well production and gravel- mining operations.
- Brownstown Marl (Upper Cretaceous) The Brownstown Marl consists of dark-gray calcareous clay, marl, and sandy marl. The unit is fossiliferous and weathers yellow to gray in color. Notable fossils are the *Exogyra ponderosa* and *Inoceramus*. The outcrop belt extends from east of Arkadelphia, southwest to the Arkansas-Oklahoma state line, and dips approximately 80 feet per mile to the south. The approximate thickness in the quadrangle is 50 feet. The unit was deposited in a nearshore marine environment and rests unconformably on the Tokio Formation (Upper Cretaceous).
 - Tokio Formation (Upper Cretaceous) The Tokio Formation consists of cross-bedded sand, gravel, gray clay, and volcanic ash. Basal cross-bedded gravels are approximately 30 feet thick. Minor sand and clay lenses occur within the gravel, while sand commonly fills the interstitial spaces around the gravel. Thinner beds (less than 1 foot in thickness) and lenses of gravel occur within the formation's sand intervals. The gravels range from pea-size to 6 inches in diameter and are composed of quartz, novaculite, sandstone, and quartzite. Iron-oxide-cemented conglomerates may be present locally. The cross-bedded sands are medium- to fine-grained quartz with minor amounts of heavy minerals, glauconite, iron-oxide concretions, and rip-up clasts of gray clay. Sands weather yellow to orange-red in color. Gray clays are lignitic, pyritic, fossiliferous, and may contain leaf imprints. The volcanic ash is light gray to white and has altered to kaolinitic clay. The source area for much of the formation's sediment was the Ouachita Mountain region. The formation outcrop belt extends from near Arkadelphia, southwest to the Arkansas-Oklahoma state line, and dips to the south at approximately 80 feet per mile. The approximate thickness in the quadrangle is less than 300 feet. The unit was deposited in a nearshore marine environment on an unconformable surface which separates it from the underlying Woodbine Formation (Upper Cretaceous).
- Woodbine Formation (Upper Cretaceous) The Woodbine Formation consists of water-laid, cross-bedded tuffs, tuffaceous sands, gravel, and red and gray clay. Basal cross-bedded gravels are approximately 20 feet thick and form a cuesta in the area. Thinner beds and lenses of gravel occur within the water-laid tuffs at the base of the unit. Gravels are 1/2 to 6 inches in diameter, well-rounded, and are composed of novaculite, quartz, sandstone, and quartzite. Iron-cemented conglomerates may be present locally. Igneous rock pebbles and cobbles are interbedded within the tuffs. Unweathered tuffs range from green to blue in color while weathered tuffs form a red waxy clay. The source for the volcanic sediments was probably centered in the area between Murfreesboro and Lockesburg, Arkansas. The source area for the gravels was the Ouachita Mountain region and the local Trinity Group. The formation outcrop belt extends from the valley of the Little Missouri River, near Murfreesboro, west to the Arkansas-Oklahoma state line, and dips approximately 80 feet per mile to the south. The approximate thickness in the quadrangle is 120 feet. The unit was deposited in a nearshore marine environment following a major unconformity which separates it from the underlying Trinity Group (Lower Cretaceous).

SYMBOLS



REFERENCES

- Bush, W. V., and Clardy, B. F., 1971, Geologic Map of the Mineral Springs North Quadrangle, Howard County Arkansas: Arkansas Geological Commission Open-File Report, scale 1:24,000.
- Dane, C. H., 1929, Upper Cretaceous Formations of Southwestern Arkansas: Arkansas Geological Survey Bulletin 1, 215 p.
- McFarland, John David, 1998, Stratigraphic Summary of Arkansas: Arkansas Geological Commission Information Circular 36, 39 p.
- Miser, H. D., and Purdue, A. H., 1929, Geology of the DeQueen and Caddo Gap Quadrangles, Arkansas: United States Geological Survey Bulletin 808, 195 p.

400'

Sea level



A-----

Kto

400'

200'

Sea level -